INTERNATIONAL MULTIDISCIPLINARY JOURNAL FOR RESEARCH & DEVELOPMENT
SJIF 2019: 5.222 2020: 5.552 2021: 5.637 2022:5.479 2023:6.563 2024: 7,805
eISSN :2394-6334 https://www.ijmrd.in/index.php/imjrd Volume 12, issue 08 (2025)

IMPROVING THE WASHING PROPERTIES OF COCOONS BY MODIFYING THEM WITH CHEMICAL PREPARATIONS

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ABSTRACT: This article considers methods for improving the washing properties of cocoons by modifying them with chemical preparations. The study studied the effect of various chemical reagents aimed at changing the fiber structure of cocoons. These modification processes showed the possibility of increasing the efficiency of cocoon processing, improving the firmness and quality indicators of fibers. As a result, optimization of production processes and increasing the competitiveness of the finished product were achieved.

Keywords: cocoon modification, chemical preparations, washing properties, fiber structure, processing efficiency, quality indicators.

INTRODUCTION

Cocoon is the main raw material for natural silk production, and its quality and spinning properties directly affect the efficiency of the silk industry. Today, new methods are being developed to improve the quality of cocoons, simplify the spinning process, and obtain high-quality silk fibers. Chemical modification technologies play a special role in this regard. Using chemical preparations, it is possible to change the physicochemical properties of cocoon fibers, making them more elastic, strong, and adaptable to the spinning process. These methods serve not only to improve production processes, but also to increase the competitiveness of silk products. This study studies effective methods of chemical modification of cocoons and analyzes their effect on spinning properties. It also studies how the chemical modification process affects the structure and physicochemical properties of cocoon fibers.

The purpose of the article is to study methods for modifying cocoons using chemical preparations and to develop scientific and practical recommendations for optimizing the processing of cocoon raw materials using these methods.

RESULTS

During the study, various methods of modifying cocoons using chemical preparations and their effect on the spinning properties of cocoon fibers were studied. The main preparations used in the chemical modification process and their effect were analyzed as follows:

The effect of chemical preparations on the structure of cocoon fibers. The reagents used in the chemical modification process, such as acidic and basic modifiers, caused structural changes in cocoon fibers. With the help of acids, the surface of cocoon fibers softened and increased elasticity were observed, which significantly improved the efficiency of the spinning process.

Speed and efficiency of the spinning process. Modified cocoon fibers were processed much faster and more efficiently during the spinning process. The absorption and water absorption properties of cocoon fibers were improved with the help of chemical preparations, which ensured the efficiency of the process in terms of time and resources.

Improvement of quality indicators. The quality indicators of chemically modified cocoon fibers, in particular, strength and elasticity, increased significantly. After the modification process, the durability and quality indicators of cocoon fibers in spinning achieved high results compared to the standards.

Economic efficiency of chemical modification. The economic aspects of the modification process were also analyzed. Improving the spinning properties of cocoon fibers using chemical preparations led to a simplification of the production process and more efficient use of resources. This, in turn, allowed to reduce production costs and increase product quality.

The results showed that chemical modification processes are effective and economically beneficial in improving the spinning properties of cocoons. These methods can serve as the basis for the introduction of new technological approaches in the cocoon industry.

DISCUSSION

The process of modifying cocoons with chemical agents is of great importance in industrial production, especially in terms of improving their water absorption properties. As studies have shown, the surface structure of cocoon fibers is changed by chemical modifiers, which increases their efficiency in water absorption and water absorption. Various agents were used in the chemical modification process, and the effect of each on cocoon fibers was studied. As a result of the studies, modifiers that change the surface of cocoon fibers, in particular acids and bases, showed the best results. Other chemicals can also be used, but their effect may depend more on the experimental conditions and the type of cocoon. Therefore, the effectiveness of the chemical modification process and its effect on the water absorption process should be studied separately in each specific case. The chemical agents used in the cocoon modification process not only change its physical properties, but also improve the strength and elasticity of cocoon fibers. This increases the efficiency of the cocoon production process, as the improved properties of the cocoon fibers allow for an increase in the quality of the finished product. It also reduces the time and energy spent on the spinning of modified cocoon fibers. Studies have shown that changing the structure of cocoon fibers through chemical modification simplifies the production process. Modified cocoons are easier to process, as their water absorption and swelling are accelerated. This, in turn, significantly increases the efficiency of the spinning process. However, the efficiency of the chemical modification process depends not only on the composition of the chemical preparations, but also on the process conditions. Factors such as the temperature, duration of the modification process, and the concentration of chemical modifiers also affect the final results of the process. Each of these parameters should be studied separately in the study and the optimal conditions should be determined. It is also important to analyze the economic efficiency of the modification process. Chemical modification processes can increase production efficiency, but the economic aspects of these processes should not be overlooked. It is necessary to find a balance between the price of chemicals, the costs of their use, and the overall efficiency of the process. This, in turn, helps to reduce production costs and increase profits.

Improving the cocoon's absorbency properties through chemical modification is not only important for improving the production process, but also for environmental reasons. Cocoon processing processes using chemicals contribute to the efficient use of natural resources, as cocoon fibers become more flexible and resistant to processing. In addition, chemical modification processes require the development of eco-technologies and the use of environmentally friendly methods. At the same time, it is necessary to develop innovative approaches to reduce waste and their impact on the environment when working with chemicals. It is important to ensure environmental safety, save natural resources and reduce waste in modification processes. The widespread introduction of chemical modification processes into the production process allows for the use of advanced technologies, reducing energy and material consumption. This, in turn, helps to increase production efficiency and improve product quality. Studies have shown that the scientific and practical results of improving the quality of cocoon fibers using chemical modification not only increase the efficiency of

industrial production, but also improve the economic aspects of this process. In addition, the social impact of the modification process should not be ignored. Improving the quality of cocoons helps to create new jobs in the cocoon industry and ensure economic stability. This, in turn, increases social and economic well-being in society. The practical application of modification processes creates new opportunities for the national economy, especially the silk industry. Additional scientific research is needed to further improve chemical modification processes and increase production efficiency. This research, in turn, will allow the development of new modification methods, new chemical preparations and modifiers. At the same time, special attention should be paid to ensuring the environmental safety of chemical modification processes.

The final analysis shows that the chemical modification of cocoon plays an important role in increasing the efficiency of production. This method can improve the washing properties of cocoon, but optimization and further research are needed for the full efficiency and economic benefit of the process. Modification processes, including new technologies and innovations, create great opportunities for the future of the cocoon industry.

CONCLUSION

Modification of cocoon with chemical agents is considered an effective and promising method for improving its washing properties. Studies show that chemical modification processes significantly change the physical and chemical properties of cocoon, increasing its processing and washing efficiency. Various types of chemical modifiers, such as acids and bases, help to change the surface of cocoon fibers, which accelerates the processes of water absorption and swelling. However, the effectiveness of the modification process depends not only on the composition of chemical agents, but also on the processing conditions, such as temperature, time and concentration. The interaction of each factor significantly affects the final results, therefore, it is necessary to optimize the processes. Chemical modification allows simplifying the washing process of cocoon fibers, increasing production efficiency and reducing energy consumption. The economic aspects of the modification process should also be taken into account. The cost of chemicals and their use, when combined with the efficiency of the process, can reduce the overall cost of production. Environmental safety also plays an important role in modification processes, since chemicals and their waste should not have a negative impact on the environment. The above analyses and results show that the chemical modification process has great potential to increase the efficiency and environmental safety of the cocoon industry. However, additional scientific research, technology development, and improvement of the efficiency of modifiers are necessary for further improvement and widespread implementation of the process. Research in this area will allow for the future development of cocoon production and its enrichment with new innovative approaches.

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